

XXII. *Two Theorems*, by Edward Waring,
M. A. Lucasian Professor of Mathematics in the University of Cambridge, and
F. R. S. In a Letter to Charles Morton,
M. D. Sec. R. S.

T H E O R E M A I.

F I G U R A I.

Read April 25, 1765. **I**N datâ Ellipsi inscribantur duo (n) Laterum Polygona $abcde$, &c. et $pqrst$, &c. ad Puncta respectiva a, b, c, d, e , &c. p, q, r, s, t , &c. ducantur Tangentes AB, BC, CD, DE , &c. et PQ, QR, RS, ST , &c. et sint

$\angle abB = \angle cbC, \angle bcC = \angle dcD, \angle cdD = \angle edE$, &c. et $\angle pqQ = \angle rqR, \angle qrR = \angle srS, \angle rsS = \angle tsT$, et sic deinceps.

Et erit Summa Laterum
 $ab + bc + cd + de + \&c. = pq + qr + rs + st + \&c.$

F I G U R A 2.

Cor. Ducatur in Ellipsi Polygonum $abcde$ &c. (n) Laterum Methodo supra traditâ; inscribatur etiam aliud Polygonum $abklm$ &c. (n) Laterum quovis alio

alio Modo, cujus unus Angulus ponitur ad Punctum
(*a*), et Summa $ab + bc + cd + de + \&c.$ major
est quam Summa $ab + bk + kl + lm + \&c.$

THEOREMA II.

TAB. IV. FIGURA I.

Describantur circa datam Ellipſim duo (*n*) La-
terum Polygona ABCDE &c. et PQRST &c.
quorum Puncta Contactuum respective sunt *a, b, c, d, e,*
&c. et *p, q, r, s, t,* &c.

Et ſint

$$\frac{\text{Tang.} + \text{Seca. Comp.} \angle aBb}{\angle cCb} :: \frac{\text{Tan.} + \text{Seca. Comp.}}{bC} \text{ et}$$

$$\frac{\text{Tang.} + \text{Seca. Comp.} \angle cCb}{\angle cDd} :: \frac{\text{Tan.} + \text{Seca. Comp.}}{cD} \text{ et}$$

$$\frac{\text{Tang.} + \text{Seca. Comp.} \angle cDd}{\angle eEd} :: \frac{\text{Tan.} + \text{Seca. Comp.}}{eD} \&c.$$

Et ſic

$$\frac{\text{Tang.} + \text{Seca. Comp.} \angle pQq}{\angle qRr} :: \frac{\text{Tan.} + \text{Seca. Comp.}}{qR} \text{ et}$$

$$\frac{\text{Tang.} + \text{Seca. Comp.} \angle qRr}{\angle sSr} :: \frac{\text{Tan.} + \text{Seca. Comp.}}{sR} \text{ et}$$

$$\frac{\text{Tang.} + \text{Seca. Comp.} \angle sSr}{\angle tTs} :: \frac{\text{Tan.} + \text{Seca. Comp.}}{tS} \text{ et ſic deinceps.}$$

Et erit Summa Laterum

$$AB + BC + CD + DE + \&c. = PQ + QR + RS + ST + \&c.$$

FIGURA

Fig. 1.

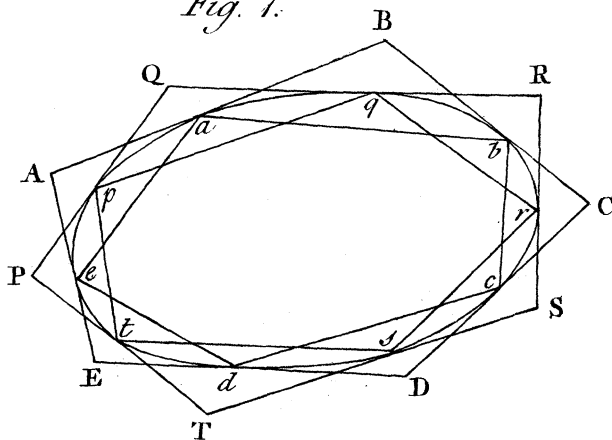


Fig. 2.

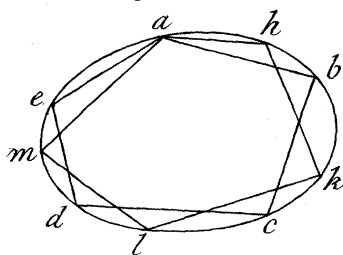


Fig. 3.

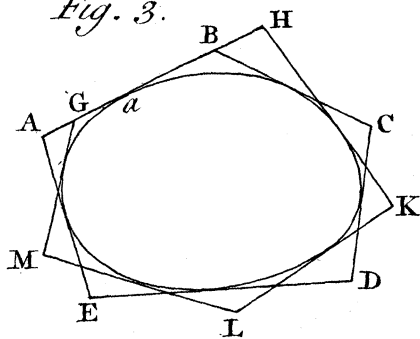


FIGURA 3.

Cor. Describatur circa Ellipsim Polygonum (n) Laterum A B C D E, &c. Methodo, quæ prius data fuit; Describatur etiam circa Ellipsim aliud Polygonum G H K L M, &c. (n) Laterum quavis aliâ Methodo, cujus unum Punctum Contactus (a) est Punctum Contactus Polygoni A B C D E, &c.

Et Summa A B + B C + C D + D E + &c. minor erit quam Summa G H + H K + K L + L M + &c.

Confimiles Proprietates affirmari possunt de Polygonis Hyperbolas descriptis, &c.